
CHAPTER 2

Easy PC Initiative

INDUSTRY EARLY REVIEW DRAFT V.0.3 — 07/20/1999 6:46 PM–

NOTE to REVIEWERS: This is a very early draft version, and no effort has been made to reconcile changes in cross references to other chapters in the guide. Please look for comments such as this in the draft, which encourage your feedback on specific issues.

Please submit comments using the form on <http://www.pcdesguide.org> or by sending e-mail to comments@pcdesguide.org.

IMPORTANT: The requirements defined in this guide provide guidelines for designing PC systems that will result in an optimal user experience with typical Windows-based applications running under either the Microsoft Windows98 “Millennium” or later or Windows2000 Professional or later operating systems. These design guidelines are not the basic system requirements for running any version of Windows operating systems.

Contents

Ease of Use Goals in PC 2001	2
Easy to Set Up	2
Easy to Use	2
Easy to Expand	3
Easy to Maintain	4
New Form Factors	4
Relevance of Legacy Removal	4

Intel and Microsoft announced the Easy PC industry initiative in 1999. This important initiative builds on the foundation laid in earlier versions of the PC System Design Guide and adopted by the industry.

This chapter describes the vision for making the PC platform simpler—especially for new users—and identifies the key focus areas for Windows-based platform designs. The emphasis is on the Consumer Desktop based on Microsoft's release of Windows 98 “Millennium”. The goal is to create new PCs that are easy to configure and use by minimizing unnecessary user exposure to devices and interfaces.

REVIEW DRAFT: FOR DISCUSSION AND REVIEW ONLY. The information contained in this document represents the current view of Intel Corporation and Microsoft Corporation on the issues discussed as of the date of publication. Because Intel and Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Intel and Microsoft, and Intel and Microsoft cannot guarantee the accuracy of any information presented. This document is for informational purposes only. INTEL AND MICROSOFT MAKE NO WARRANTIES, EXPRESS OR IMPLIED, IN THIS DOCUMENT. Please see the disclaimer for PC 2001 System Design Guide, which is included in this review package.

Intel and Microsoft jointly promote this industry initiative with the conviction that it will advance the PC platform. End users will benefit from related industrial design advances including innovative new form factors and improved accessibility. The industry will benefit from reduced support costs by removing PC configuration problems.

The key goal for the Easy PC Initiative is to produce new PC products that are easy to set up, easy to use, easy to expand, and easy to maintain. This chapter provides the framework for the issues that need to be addressed in each of these areas, and also provides a high-level review of Easy PC platform focus areas in the *PC 2001 System Design Guide*.

For additional information about the Easy PC Initiative, see the related web sites from Intel at <http://developer.intel.com/technology/easeofuse/> and from Microsoft at <http://www.microsoft.com/hwdev/newpc>.

Ease of Use Goals in PC 2001

This section identifies key areas of advancement that are advocated under the Easy PC Initiative. Many of these are extensions to focus areas identified in earlier guides.

Easy to Set Up

The setup process has been shown to confuse first-time and non-technical users. The goal is to get the user from “PC in box” to “PC in use” with a straight forward, satisfactory result, with no prior knowledge required of the user. Addressing this goal entails total pre-configuration by the system manufacturer of hardware, drivers, applications, connectivity, registration and utilities.

Set-up guidelines include user friendly packaging, intuitive steps to assembly of subsystems, easy access to help and quick access to the Internet and to email. Superior integration of hardware and software is a big step towards addressing this goal. Special considerations are identified for coding and accessibility of connectors. In particular, the system should be configured ready for broadband (DSL and cable modem) connectivity and home networking. There should be no reboot cycles and no complex configuration wizards.

Easy to Use

The PC is one of the more powerful, flexible and necessarily sophisticated devices that the average person will use. On the other hand, these characteristics may be daunting to new users who need simplicity. The goal is to maintain the PC's power and flexibility, while presenting the user with simplified, intuitive access to information and system functionality.

Starting with first use, hardware and software must be easily discoverable and immediately usable. The environment for finding and exploring new capability must be forgiving. Common tasks that are performed frequently should be exposed prominently to find and use. These improvements can be accomplished through a combination of hardware, firmware, operating system and applications.

Overall, the PC should have improved robustness and reliability, enabled via reduction of fragile legacy hardware and software, plus adoption of self-repairing features. Hangs and crashes should be infrequent and recovery should be graceful. Any user notification of machine state should be relevant and comprehensible. As newer technologies are incorporated, there should be particular emphasis on integration and user experience. Suspend and resume power management features should be fast and reliable. Networking should be automated and transparent. User preferences in the areas of sharing, privacy and personalization should be easily comprehended and readily configured.

Note to Reviewers: We do not want to define this requirement in terms of “support S3 and S4.” However, the following operating system behaviors are not yet defined by Microsoft, which must answer these questions before this requirement can be defined in PC 2001:

- ?? The need for all preconfigured drivers and applications be able to be power managed – else a suspend will fail, only shutdown and hibernate will work
- ?? How the OS will handle a “connection” when the system is suspended
- ?? How the OS will handle a suspend if the system is the host for home networking or proxy for Internet connection sharing?
- ?? How the OS will inform the end user if they are installing a device or application that will not respond to a suspend request?

Easy to Expand

Integral to the flexibility of the PC is the ability to expand its hardware, software, and networking capabilities. It should be easy to add new features to the PC without compromising its prior functionality. Expansion should be via external, hot-plugged connections—such as USB—so the user does not have to open the PC case or shut down the system.

Where possible, the PC should be pre-configured for anticipated expansion. There should be a suitable number of accessible connectors. Budgeting of power should be adequate to support external devices and any over-subscription of resources such as bandwidth and power should be handled gracefully. Relocating devices should not result in new discovery sequences. Device class drivers and mappers for USB adapters should be pre-loaded when available.

Installs and uninstalls of drivers and applications should be complete and leave the PC registry and files in a clean state.

Easy to Maintain

From the user's perspective, maintenance is an unnecessary and unrewarding chore. It is important that the PC auto-maintain what is possible and any user interaction be simple and quick. Where user action may adversely impact the machine state, there should be adequate safeguards and appropriate anticipation of user actions. Preserving user data and application configurations should be considered.

Maintenance should include updates to the BIOS and operating system. Many of the observations under "Easy to Use" such as system robustness and "Easy to Expand" such as install/uninstall cleanliness are relevant to easy maintenance.

Microsoft supports web-based service and driver updates through the Windows Update web site at <http://windowsupdate.microsoft.com>. Manufacturers are encouraged to participate in the testing and licensing programs provided for this web site, and to implement similar capabilities for other software components bundled with PC systems. For information about requirements for Windows Update, see <http://www.microsoft.com/hwdev/desinit/digitsign.htm>.

Note to Reviewers: More information will be provided about this category in the next review draft.

New Form Factors

A related goal for the Easy PC Initiative is to encourage system designers' efforts to introduce new, innovative industrial designs, including designs that present smaller footprints. The PC 2001 guidelines do not make requirements or recommendations for designs based on a specific form factor. On the other hand, by de-emphasizing internal expansion requirements, system designers are free to pursue alternative design options.

Relevance of Legacy Removal

With the evolution of the PC architecture, newer interfaces and approaches provide preferred methods of integrating components and devices. When superior functionality can be attained with newer technologies at appropriate cost points, the "legacy" interfaces are ready for obsolescence. Removal of legacy interfaces presents the opportunity for simplifying and streamlining the platform, for both the hardware and the operating system. In turn, this opens the door to a more robust, easier-to-use PC platform while allowing PC platform designers to remove much complexity and cost from their products. Increased reliability and easier maintenance translates into lower support costs. Thus, two complementary benefits are the industry benefits and the user benefits.

First, the industry perspective: Delivering a lower cost PC is increasingly an OEM focus. As the price of hardware drops, the design, build, and support costs increasingly becoming a higher percentage of the total product cost. Carrying the burden of legacy I/O adds to system and support costs. Removing the I/O connectors and associated gates and pins, translates into lower product cost. Additionally, simplifying the way devices are added and removed translates into reduced support cost.

Second, the user perspective: Newer interfaces, such as PCI and USB, provide greater flexibility in operating system enabled resource allocation, dramatically reducing configuration conflicts and the need for manual intervention. Consequently, the user has the ability to support a greater number of devices types behind a fewer variety of interfaces.

It should be emphasized that removal of legacy interfaces is only a first step. It is important to implement the full potential of the newer interfaces, including the observance of hardware interface compliance and bus class requirements, so that the simpler capabilities for dynamically adding and removing devices are delivered.

Performance improvement is a secondary motivator for legacy I/O removal. Many devices, such as storage, graphics and audio, have already migrated onto the faster PCI and AGP interfaces. However, end users will perceive certain residual performance benefits. For example, implementing devices on new buses will eliminate the performance drag of I/O across legacy COM and LPT. Boot speed will also increase in systems that eliminate legacy code paths and implement properly designed replacement architectures.

Relative to the Easy PC, the roadmap for Legacy Removal is described in the chapter on Easy PC Architecture. Specific requirements for Legacy Removal are provided in [TBD].

For additional details about the rationale for and benefits from legacy removal from PC architecture, see the related web site from Intel at <http://developer.intel.com/technology/easeofuse/> and from Microsoft at <http://www.microsoft.com/hwdev/newpc/>.